



# MUNICIPAL WATER AND SANITATION BOARD CIUDAD JUAREZ

## CONEJOS MEDANOS AQUEDUCT OCTOBER 2008

# BACKGROUND

The rapid population and industrial growth that has occurred in Ciudad Juárez in recent years, as well as the deterioration of water quality as a result of the over-exploitation of the Hueco Bolson Aquifer, as the only current water supply source for the city, has caused serious water supply problems because of the increasing demand that is not supported by the infrastructure needed for an adequate and guaranteed supply.

In order to meet the current and future demand, for several years now a variety of potential water supply sources have been studied; the one that is considered to be the most feasible is the "La Mesilla" aquifer in an area known as the Conejos Medanos Valley.

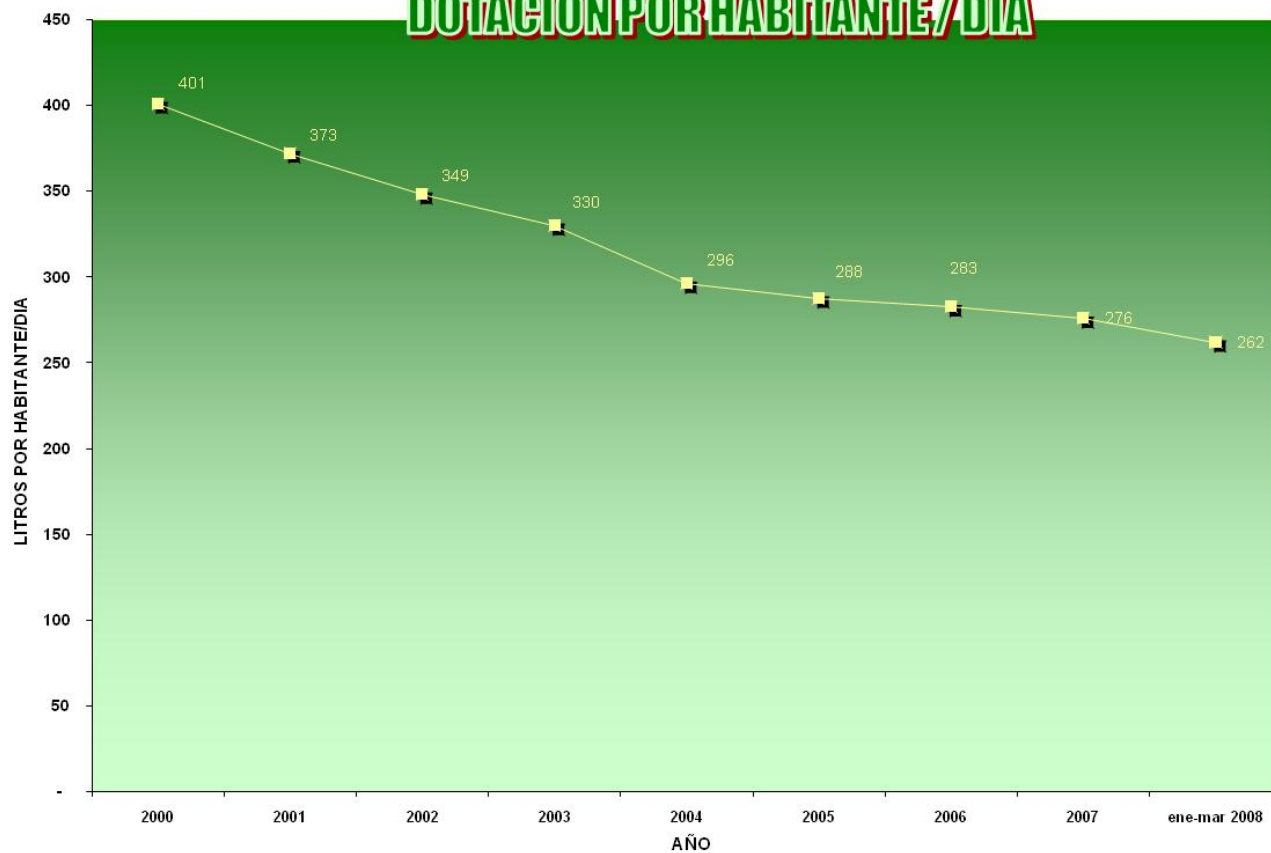
# PROJECT OVERVIEW

## DATOS GENERALES Y AVANCES:

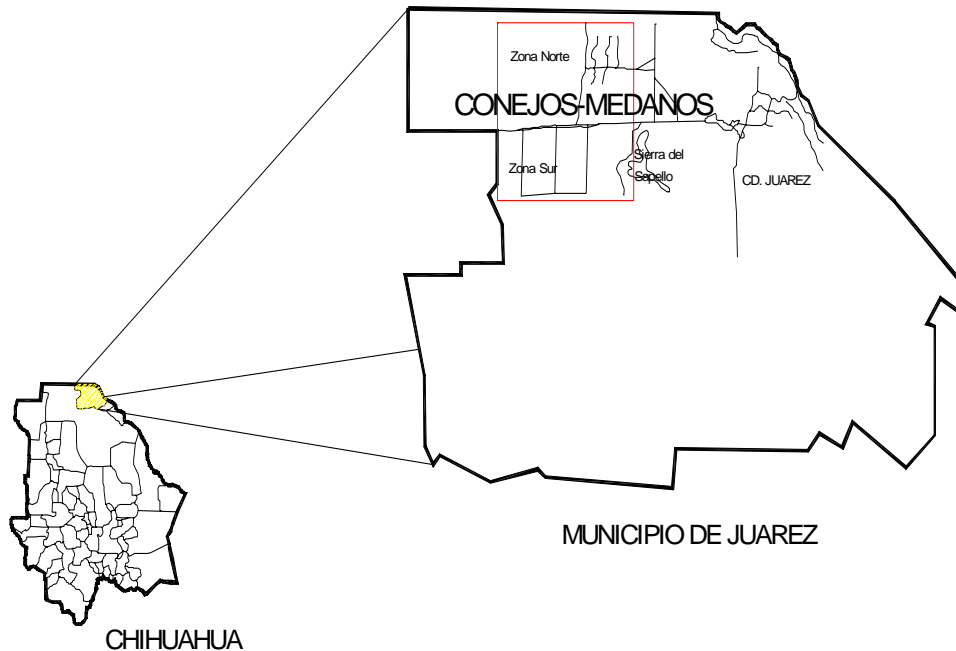
AREA URBANA	27.271	HAS
POBLACION ( <b>SEGUN CONTEO INEGI 2005</b> )	1.313.338	HAB
NUMERO DE TOMAS AGUA POTABLE CONTRATADAS ( <b>MAR 2008</b> )	401.122	CTAS
NUMERO DE DESCARGAS ALCANTARILLADO CONTRATADAS ( <b>MAR 2008</b> )	376.612	CTAS
AREA CON COBERTURA DE SERVICIO DE AGUA POTABLE	26.453	HAS
AREA SIN COBERTURA DE SERVICIO DE AGUA POTABLE	818	HAS
PORCENTAJE DE COBERTURA DE SERVICIO DE AGUA POTABLE	97	%
PORCENTAJE DE COBERTURA DE SERVICIO DE ALCANTARILLADO	92	%
PLANTA DE TRATAMIENTO NORTE	2,50	M3/SEG
PLANTA DE TRATAMIENTO SUR	1,00	M3/SEG
TUBERIA INSTALADA AGUA POTABLE ( <b>HASTA 2007</b> )	4.182.590	ML
TUBERIA INSTALADA ALCANTARILLADO ( <b>HASTA 2007</b> )	3.512.547	ML
TUBERIA INSTALADA AGUA RECUPERADA ( <b>HASTA 2007</b> )	24.855	ML
VOLUMEN ALUMBRADO ANUAL ( <b>2007</b> ):	159.357.774	M3
VOLUMEN ALUMBRADO ACUMULADO ( <b>ENE-MAR 2008</b> ):	64.980.169	M3
DOTACION POR HABITANTE ( <b>PROMEDIO ENE-MAR 2008</b> )	250	Lt/Hab/Día
DOTACION POR HABITANTE ( <b>PROMEDIO ANUAL 2007</b> )	276	Lt/Hab/Día

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## DOTACION POR HABITANTE/DIA



# LOCATION



The Conejos Medanos region is located in the northern part of the state of Chihuahua, Mexico, along the United States border, bounded by the latitudes  $31^{\circ} 51'38''$  and  $31^{\circ} 20'41''$ , and by the longitude coordinates  $107^{\circ} 15'36''$  and  $106^{\circ} 31'58''$ ; at an average distance of 40 Km (25 miles) west of Ciudad Juárez, with dimensions of 70 km (43 miles) by 56 Km (35 miles) for a total surface area of 3,920 Km<sup>2</sup> (1513 square miles).

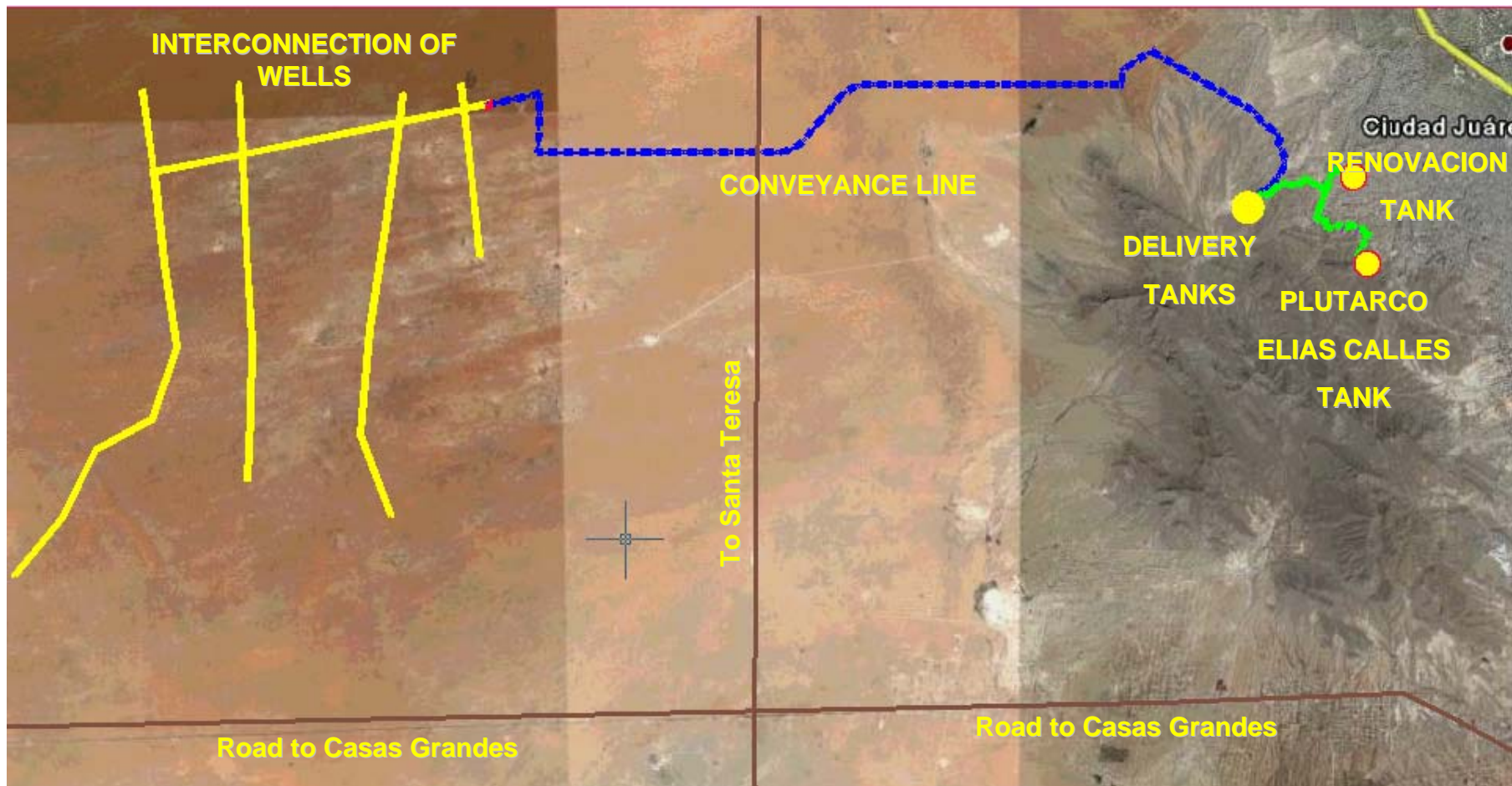
# EXECUTIVE PROJECT

Based on that, the executive project for the Conejos Medanos Aqueduct was drafted taking into consideration that the supply source will be made up of 23 existing wells, which together are expected to provide a flow rate of 1 m<sup>3</sup>/s (35 cubic feet per second or 23 million gallons/day [mgd])

- ☐ **Approximate benefitted population: 345,000**
- ☐ **Group of 23 deep wells with a flow rate of 1,000 liters/second (23 million gallons/day)**
- ☐ **Interconnection of the wells with pipes ranging from 10" to 36" in diameter for a total of 47 Km.**
- ☐ **Booster Station with 5 pumps, 250 liter/second (66 gal./sec. or 5.7 mgd) each.**
- ☐ **42" diameter, steel conveyance pipeline for a distance of 25 kilometers (16 miles)**
- ☐ **1 - 3,000 m<sup>3</sup> (106,000 cubic feet) Pressure tank.**
- ☐ **3 - 5,000 m<sup>3</sup> (176,000 cubic feet) capacity Delivery tanks, each made from welded steel.**
- ☐ **Chlorine gas disinfection system.**
- ☐ **Pipelines to connect existing tanks: Renovación, Plutarco E. Calles and Altamirano.**
- ☐ **115,000-volt power transmission line.**
- ☐ **Electrical substation, 115,000 to 34,500 volts.**
- ☐ **34,500-volt feeder lines.**
- ☐ **Access roads for construction, operation and maintenance.**
- ☐ **Telemetry and Supervisory Control System.**



# LAYOUT OVERVIEW







# PROJECT LOGBOOK



# PROJECT LOGBOOK





# MUNICIPAL WATER AND SANITATION BOARD CIUDAD JUAREZ

**ANAPRA WWTP**





# SANITATION PLAN



## ANAPRA PLANT

INSTALLED CAPACITY: 96 LPS (2 mgd)  
QUALITY 20/20



## NORTH PLANT

INSTALLED CAPACITY: 2,500 LPS (57 mgd)  
ADVANCED PRIMARY



## SOUTH PLANT

INSTALLED CAPACITY: 1,000 LPS (23 mgd)  
ADVANCED PRIMARY

## SOUTH-SOUTH PLANT

INITIAL CAPACITY 500 LPS (11 mgd)  
SCALABLE UP TO 2,000 LPS (46 mgd)  
SECONDARY QUALITY 75/75



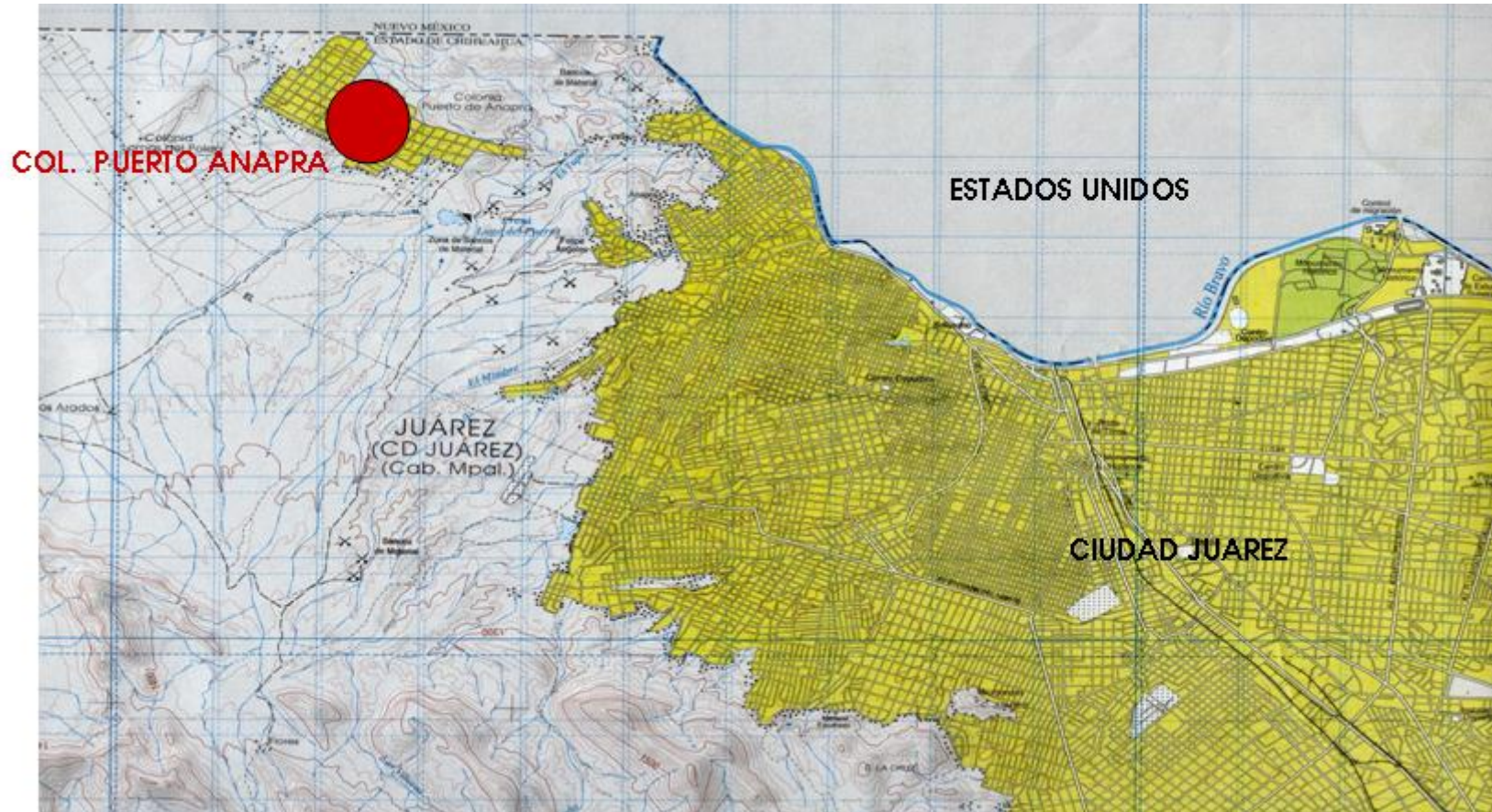
 Under Construction

 In Planning Phase

# PROJECT OVERVIEW PHASE 1

Colonia Anapra sewer lines	Needed to convey wastewater to the lift station; this infrastructure is built entirely within the Border Program for Drinking Water, Sewerage and Sanitation in Urban Zones (APAZU).
Lift station, includes backup generator and internal combustion motor	Needed to elevate the raw wastewater to the treatment point.
Conveyance line from lift station to WWTP	Needed to convey wastewater from the lift station towards the plant.
Primary and secondary treatment module (32 lps ea.) for a total of 64 lps	Needed for sanitation in Colonia Puerto Anapra.
Conveyance line from lift station to Nadadores Collector (emergency collector)	Essential in case of emergency problems at the treatment plant, in order to be able to convey the wastewater to the Nadadores Collector.
System of purple lines for reuse of treated water	Construction necessary to convey the reclaimed water to the subdivision's parks and roadside landscaping.

# LOCATION COL. PUERTO ANAPRA

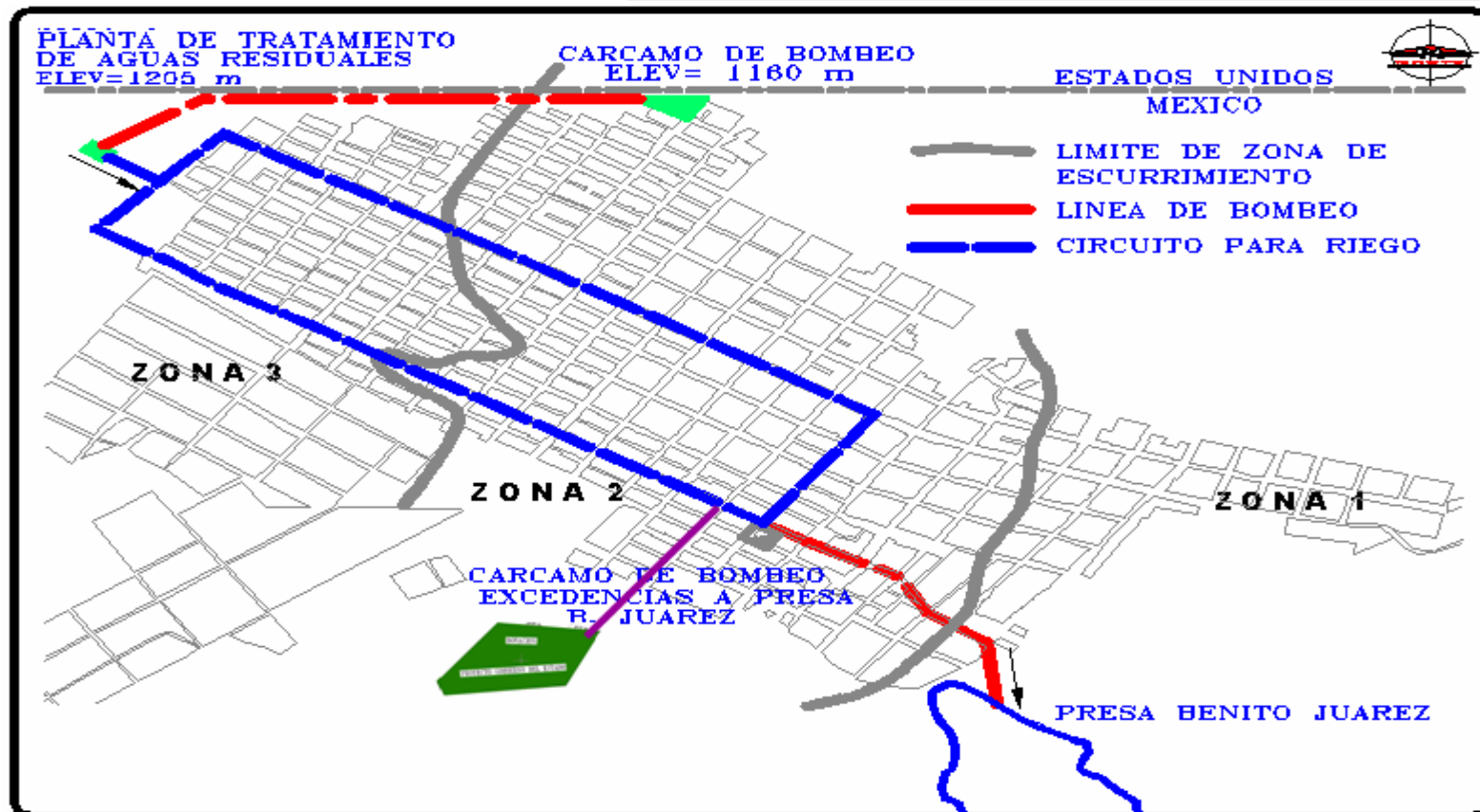




# LOCATION OF ANAPRA WWTP



# PROJECT LAYOUT OVERVIEW



**PROGRESS THRU JULY: 86%**



# CONSTRUCTION PROGRESS



# PRIORITY PROJECTS

- UPGRADE OF THE NORTH PLANT TO SECONDARY TREATMENT (75/75)
- EXPANSION OF THE SOUTH PLANT TO 2,000 LPS (46 mgd) AND UPGRADE TO SECONDARY TREATMENT
- SLUDGE PIPELINE FROM THE NORTH PLANT TO THE SOUTH PLANT WITH BIOSOLIDS TREATMENT
- START VALLE DE JUAREZ PLANT WITH 500 LPS (11 mgd) SECONDARY TREATMENT



JUÁREZ

PLANTA ANAPRA  
96 lps  
calidad 20/20

SISTEMA NORTE

SISTEMA CENTRAL

SISTEMA SUR

PLANTA NORTE  
2,500 lps  
primario avanzado

PLANTA SUR  
1,000 lps  
primario avanzado

PLANTA SUR-SUR  
500 lps  
calidad 75/75

## SANITATION COVERAGE

DIRECCION TECNICA